



278 N. Santa Cruz Avenue, Los Gatos, California

Dear Sir;

Thank you for your interest in our Model 300 Digitizer.

I am enclosing a copy of our latest brochure and a list of our local representatives. If a representative has not yet been appointed in your area, please feel free to contact me for any further information you require.

Our applications and programming staff can, I'm sure, provide some impressive figures on the advances in accuracy and economy possible through the application of the Model 300's capabilities to your particular data reduction problems.

Yours sincerely,
CALMA COMPANY

A handwritten signature in black ink, reading "Calvin B. Hefte". The signature is written in a cursive style with a large, stylized "C" and "H".

Calvin B. Hefte
Vice President

CBH/jd
2 encl.

Phone 354-3740, Area Code 408, TWX 571-7205

CALMA COMPANY
List of Representatives

**DELAWARE, MARYLAND, VIRGINIA,
WASHINGTON, D. C. , WEST VIRGINIA
(PARTIAL)**

Data-Plot Associates
Mr. Gregory Bell
4801 Montgomery Lane
Suite 304
Bethesda, Maryland
301-654-9200
TWX: 301-365-8885
Salesman:
Len Farrell

NORTHERN CALIFORNIA

Calma Company
Mr. Roy Smith
Sales Engineer
278 North Santa Cruz Avenue
Los Gatos, California
408-354-3740
TWX: 408-571-7205

**OKLAHOMA, ARKANSAS, LOUISIANA,
TEXAS (EXCEPT EL PASO COUNTY)**

Computer Marketing Corporation
Mr. W.R. "Rusty" Hays, Jr.
405 North Bowser - P.O. Box E
Richardson, Texas
AD1-3396 (Dallas 214)
TWX: 214-231-1406
HOUSTON OFFICE:
710 Cherrybark Lane
713-405-6237

**SOUTHERN CALIFORNIA, SOUTHERN
NEVADA**

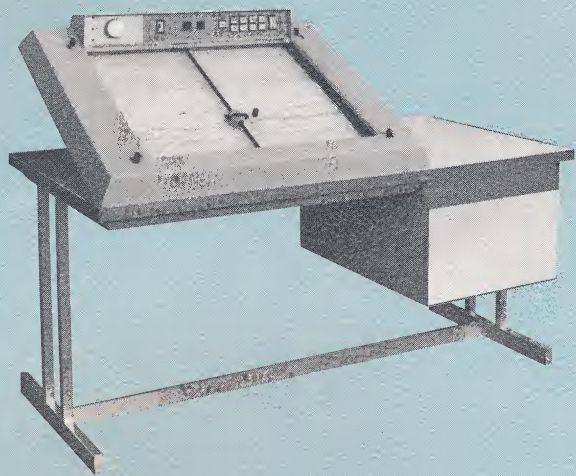
King Engineering Company
Mr. Robert E. King, Jr.
15720 Ventura Boulevard
Suite 416
Encino, California
213-981-0161
Salesmen:
Richard A. Terry
Jerry Howard

**NEW MEXICO PLUS EL PASO COUNTY
(TEXAS)**

Data Handling Company
Mr. Ray Rachkowskei
2129 San Mateo North East
Albuquerque, New Mexico
505-268-0928

OREGON, WASHINGTON, IDAHO, MONTANA

Calma Company
Mr. Ernest G. Brown
Sales Engineer
278 North Santa Cruz Avenue
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MODEL 300 DIGITIZER

CALMA
COMPANY

DIGITIZING

The CALMA Model 300 Digitizer is a new device for reducing analog graphical data to digital form for computer processing and analysis. The maximum digitizing speed of the Model 300 is 50 inches of analog trace per minute.

CALMA MODEL 300

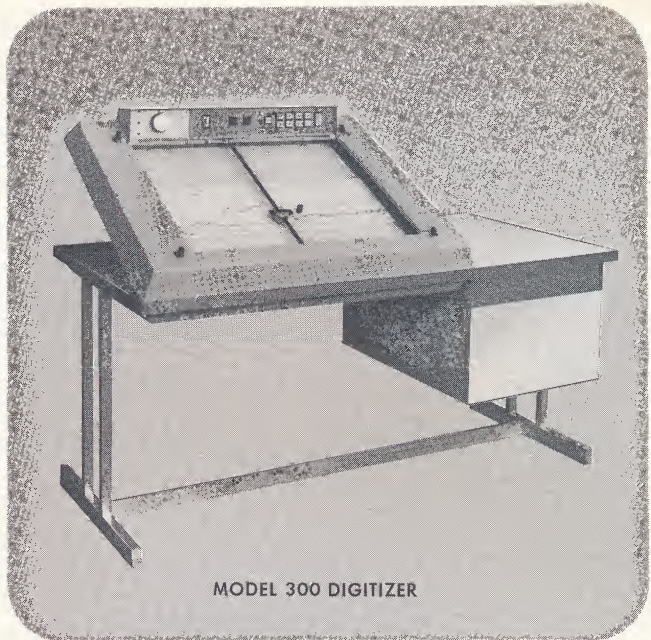
The Model 300 is the result of the application of human engineering and work-flow analysis to the process of analog plot digitizing. This new system produces digitized analog data directly on magnetic (or paper) tape, without awkward handwheels and cranks, delicate potentiometers, analog-to-digital voltage converters, punch cards, or a small inter-process computer.

To digitize analog data directly on tape, the operator simply traces the analog plot with a movable stylus/carriage assembly. The movements of the stylus are recorded as incremental digital pulses. Also recorded on the tape, through a manual entry keyboard, are the required programming instructions to the final processing computer (scaling factor, zero offset, inter-record gap, error-correction, etc.). Using the standard 200 cps incremental tape transport, the Model 300 can digitize 50 inches of analog trace per minute.

As the operator traces the analog plot, each 0.01 inch movement of the stylus in either the X or Y direction causes a pulse to be generated by the digital position sensing elements. Each incremental motion is recorded in a single character on magnetic (or paper) tape, leaving the task of summing the increments for whole value coordinates to the final processing computer. One-half inch of magnetic tape is used to record incremental data for each one-inch of analog trace. Conventional digitizing equipment, sampling at more than 10 coordinate readings per inch, generally requires more magnetic tape per unit of tracing than the Model 300.

CONVENTIONAL EQUIPMENT

With conventional point-by-point digitizing equipment, the operator must center movable

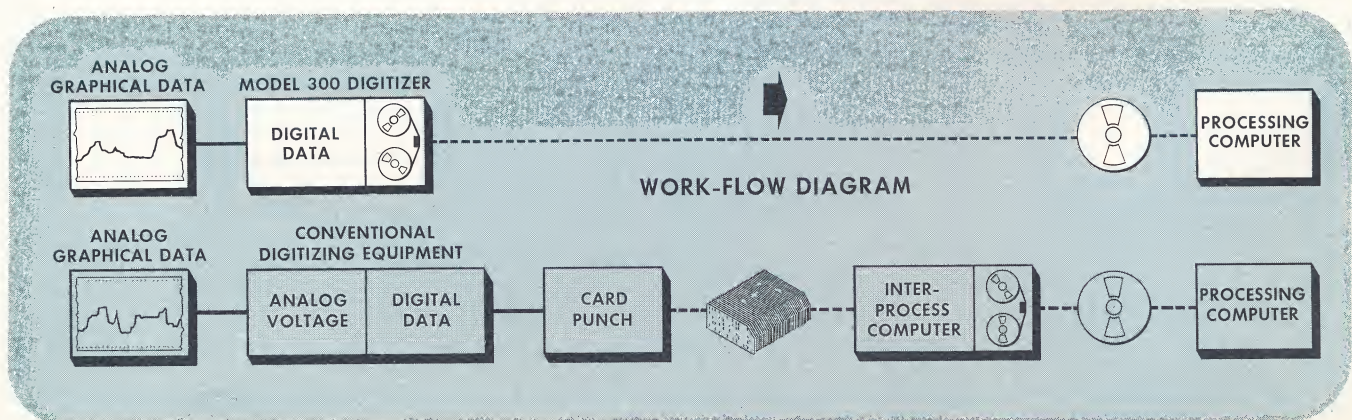


crosshairs over the analog curve with cranks or handwheels; enter the coordinates; and laboriously crank the crosshairs to a new position. The position of the crosshairs is sensed by potentiometers, and an analog voltage is generated when the coordinates are entered. The generated voltage is processed through an analog-to-digital converter and recorded on a punch card. The punch cards are usually processed through a small computer (such as an IBM 1401) to enter the digital coordinates, in usable form, on magnetic tape. Finally, the tape is processed by a large computer and the required data analysis is performed.

The time required for digitizing analog data with conventional equipment can be reduced by at least one order-of-magnitude through use of the CALMA Model 300 digitizer.

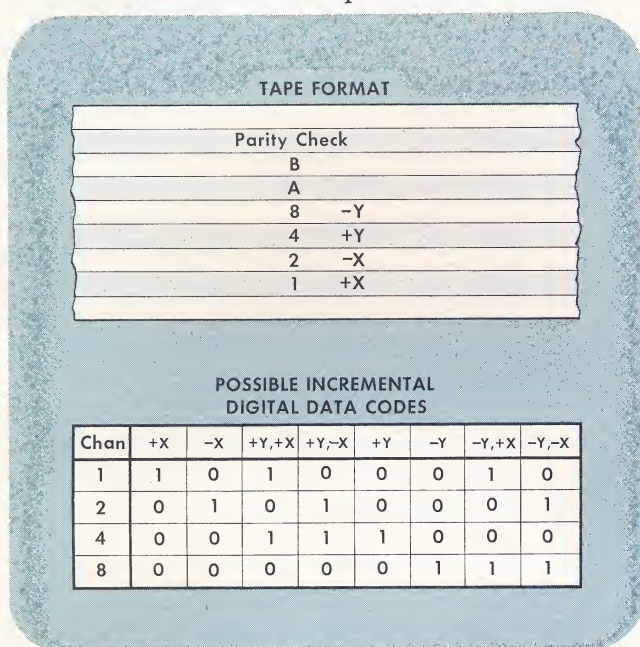
FORMAT

Channels 1, 2, 4 and 8 are used for recording incremental digital data. A $+x$ increment is recorded as a "one" in the 1 channel; $-x$ is recorded as a "one" in the 2 channel; $+y$ is recorded as a "one" in the 4 channel; and $-y$ is recorded as a "one" in the 8 channel.



A manual entry keyboard with keys for entering information on the four incremental data channels (1, 2, 4 and 8) and channels A and B is built into the Model 300 console. Using the available incremental data channel codes and the A and B channels, an alpha-numeric code of six bits can be recorded from the keyboard.

With each character recorded from either the keyboard or the digitizer, the lateral odd parity bit is derived and recorded. When the INTER-RECORD-GAP button is depressed, the IRG and longitudinal parity bits are automatically generated and recorded. END-OF-FILE gaps are generated and recorded when the EOF button is depressed.



SCALING AND ZERO OFFSET

A conventional digitizer is scaled by adjustment of its variable sensing potentiometers. Scaling is always approximate because the pots drift with temperature and time.

With the Model 300, accurate scaling can be accomplished by either of two methods. Scale factors can be manually entered on the keyboard along with an identifying code, and the readings proportioned by the processing computer program. Or the full scale value can be entered from the keyboard along with the full scale distance entered from the tracer, and final proportioning accomplished in the processing computer.

Zero offset is accomplished in conventional digitizing equipment by cranking the handwheels up to the predetermined point before tracing. But only a limited percentage of the possible full scale can be offset while still maintaining enough range to provide the required digitized data. With the Model 300, the operator enters a zero offset code and the required offset on the manual keyboard. Offset range is unlimited.

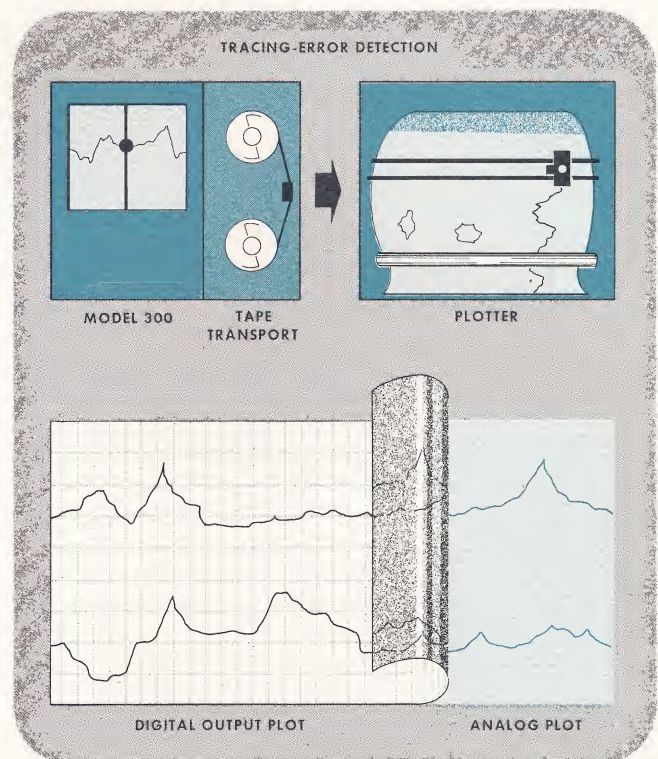
ERRORS

In addition to a simplified error-correction procedure, the Model 300 possesses a unique capability for tracing-error detection.

To provide for error correction, the operator marks the analog plot when he pauses to enter an IRG on the tape. Then, if he makes a tracing error, he enters an error code on the manual keyboard and retraces the curve from the preceding IRG. The processing computer is programmed to disregard all information from the error code back to the last IRG, and to continue the digitized curve, from the IRG, with the data immediately following the error code.

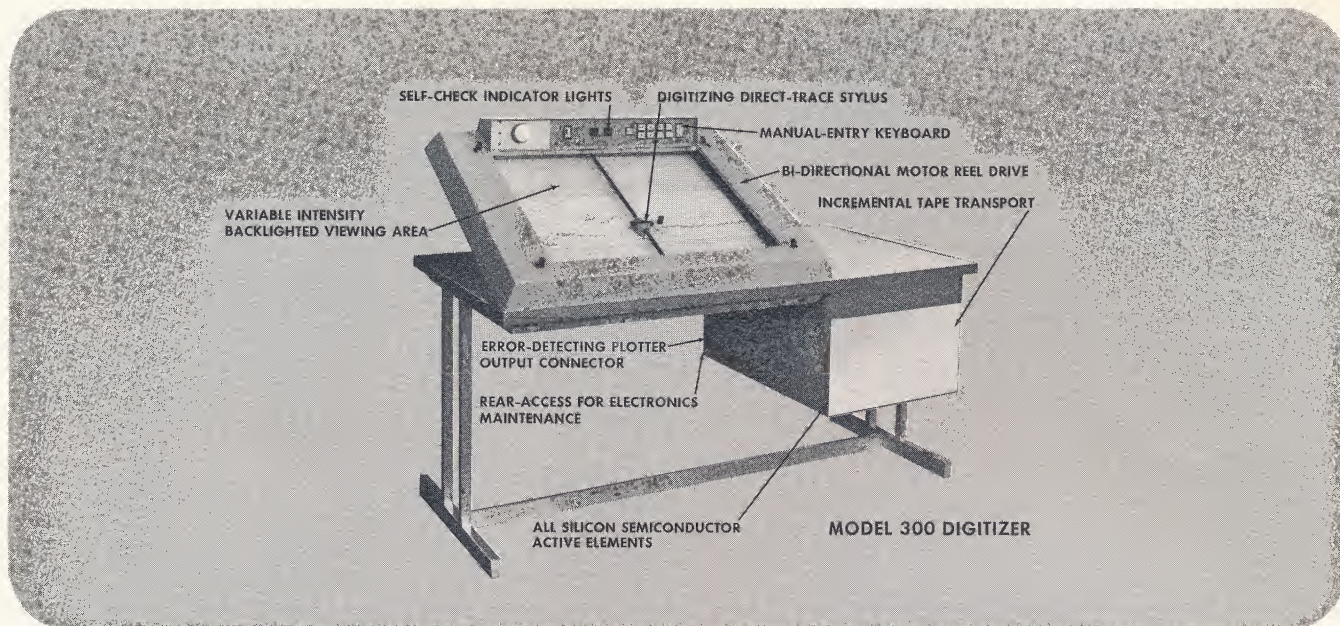
If a tracing-error detection system is required, an incremental digital plotter can be connected to graphically record the actual digitized plot as traced by the operator. (A connector interfaced to the Calcomp Model 565 Plotter is provided on the standard Model 300 Digitizer.)

The operator can check his tracing accuracy by aligning the digitized plot trace over the original analog plot on the backlighted viewing field of the Model 300.



CALMA DESIGN SERVICE

Calma's engineering staff and manufacturing facilities are available to assist in adapting the basic Model 300 to your special data reduction requirements. Any modification required — higher speed or density incremental tape transport, paper tape output, special keyboard configuration — can be quickly and economically performed.



SPECIFICATIONS

PERFORMANCE

Maximum Tracing Speed—50 inches/minute (with the standard 200 cps 200 bpi magnetic tape transport)
 Accuracy..... ± 0.012 inch
 Resolution..... ± 0.010 inch
 Output.....Magnetic tape, IBM compatible format

MECHANICAL

Tracing Area Dimensions.....18 x 24 inches
 Tracing Area Configuration.....Diffused back lighting with variable light intensity
 Paper Feed Mechanism.....Bi-directional torque-motor reel drive
 Paper Hold-down.....Mechanical
 Keyboard.....Manual entry
 Overall Dimensions.....58½ inches (l) x 30 inches (d) x 34 inches (h)

ELECTRICAL

Power Requirements.....105-125 vac, 60 cps, single-phase
 Active Electronic Elements.....Silicon semiconductors

ENVIRONMENTAL

Temperature, Humidity, Dust.....Normal industrial/clerical conditions

OPTIONS

High-speed Tape Transport.....300 cps (characters/second)
 High-density Tape Transport.....556 bpi (bits/inch)
 Paper Tape Output Unit.....Replaces standard magnetic tape unit
 Output Plotter.....For tracing verification; interfaced to connector supplied on standard Model 300

PRICE Price subject to change without notice.

Model 300 Digitizer with 200 ips Magnetic Tape Output.....\$18,000 F.O.B. Los Gatos, California

(All products of The Calma Company are guaranteed to meet or exceed advertised specifications.)



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